

What is claimed is:

1 1. A device for detecting a turbo pump drive state in a tendetron accelerator of a
2 semiconductor ion implantation device, comprising:
3 a turbo pump formed inside of the accelerator;
4 a current detecting part formed inside of the accelerator for detecting a turbo pump
5 driving current applied to the turbo pump, and providing a first electrical signal indicative of
6 the detected turbo pump driving current;
7 an electro-optical converter formed inside of the accelerator for converting the first
8 electrical signal to an optical signal;
9 a photoelectric converter formed outside of the accelerator for converting the optical
10 signal to a second electric signal;
11 an optical cable formed between the electro-optical converter and the photoelectric
12 converter for carrying the optical signal out of the accelerator; and
13 a displaying part formed outside of the accelerator for receiving the second electric
14 signal and displaying the turbo pump driving current contained in the second electric signal.

1 2. The device for detecting a turbo pump drive state as recited in claim 1, further
2 comprising an interlock generator formed outside of the accelerator for comparing the
3 second electric signal with a set current range, and generating an interlock signal when the
4 second electric signal is out of the set current range.

1 3. The device for detecting a turbo pump drive state as recited in claim 2,
2 further comprising an accelerator power supply formed outside of the accelerator for
3 providing power to the accelerator,
4 wherein the accelerator power supply receives the interlock signal generated from the
5 interlock generator, and
6 wherein the accelerator power supply stops providing power to the accelerator when
7 it receives the interlock signal.

1 4. The device for detecting a turbo pump drive state as recited in claim 1, further

2 comprising:
3 a generator formed inside of the accelerator for generator drive power; and
4 an electrical cable for supplying the drive power to the turbo pump,
5 wherein the current detecting part is electrically connected to the electrical cable.

1 5. The device for detecting a turbo pump drive state as recited in claim 1, further

2 comprising a stripper formed inside the accelerator, wherein the current detecting part and
3 the electro-optical converter are assembled on a board and disposed in the stripper, thereby
4 preventing dielectric breakdown.

1 6. The device for detecting a turbo pump drive state as recited in claim 5, wherein
2 the optical cable maintains an electric insulating state between a ground of the tendetron
3 accelerator and a high voltage of the stripper.

1 7. A method of detecting a turbo pump driving state in a tendetron accelerator of a
2 semiconductor ion implantation device, the method comprising:
3 detecting a current applied to a turbo pump in the tendetron accelerator;
4 outputting the detected current as an optical signal;
5 transmitting the optical signal through an optical fiber that passes from inside of the
6 accelerator to outside of the accelerator;
7 converting the optical signal transmitted through the optical fiber to an external
8 electric signal; and
9 displaying a current value of the external electric signal.

1 8. The method of detecting a turbo pump driving state as recited in claim 7,
2 wherein after detecting the current applied to a turbo pump, the method further
3 comprises generating an internal electrical signal indicative of the detected current, and
4 wherein the outputting of the detected current as an optical signal is performed by
5 converting the internal electrical signal to the optical signal.

1 9. The method of detecting a turbo pump driving state as recited in claim 7, further

2 comprising:

3 comparing the current value of the external electrical signal with a set current value

4 range; and

5 cutting off a power supply of the accelerator when the current value of the external

6 electrical signal is out of the set current value range.

10. The method of detecting a turbo pump driving state as recited in claim 9, further

comprising generating an interlocking signal when the current value of the external electrical

signal is out of the set current value range.